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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/622,660	07/21/2003	Takashi Yamaguchi	2018-743	3836
23117 7590 10/04/2007 NIXON & VANDERHYE, PC 901 NORTH GLEBE ROAD, 11TH FLOOR ARLINGTON, VA 22203			EXAMINER CECIL, TERRY K	
			ART UNIT 1723	PAPER NUMBER
			MAIL DATE 10/04/2007	DELIVERY MODE PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/622,660	Applicant(s) YAMAGUCHI ET AL.	
	Examiner Mr. Terry K. Cecil	Art Unit 1723	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 10 July 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-8,10,11 and 17-34 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-8,10,11 and 17-34 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION***Claim Rejections - 35 USC § 103***

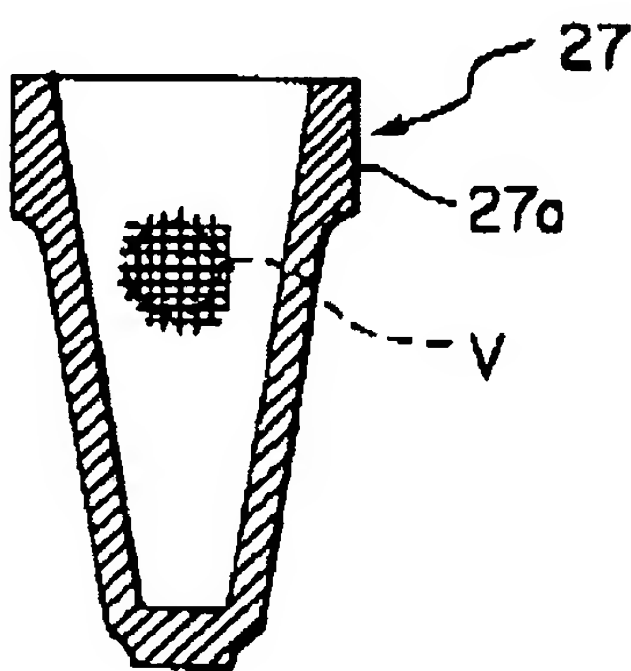
1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

2. Claims 1, 3, 10-11, 15-17, 19-20, 22 and 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi et al. (U.S. 6,190,139 B1) in view of Verlag (US Publication XP-000766379). Isozumi teaches an injector comprising a



filter with a bore hole of an inlet of fuel injector (figure 1). The filter 27 includes an inlet section 27a (fixed in the peripheral surface of the passageway of the bore hole), a closed end, and a filter section therebetween. Because of the tapering of the filter section a tubular passage exists between the filter section and the inner surface of the bore. Because of the shape of the sides of the closed end, the cross-sectional area between the outer surface thereof and the inner surface of the bore gradually increases in a downstream direction. As shown in figure 4, the inlet section gradually tapers to the filter section, such that the examiner contends that there certainly exists a

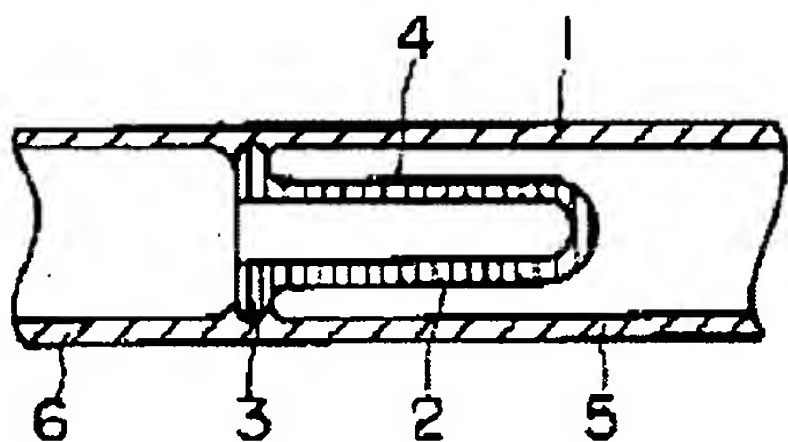
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cross-sectional area of the tubular passage (adjacent the inlet section) that is equal to or smaller than the total cross-sectional area of the filter openings (27b, shown in figure 5) [as in claims 1, 10-11, 15-17, 19-20 and 22], wherein the end is considered to be *approximately* conically-shaped, the diameter thereof increasing in a fluid flow direction [as in claim 3].

Since the high pressure pump (and the filter) of is connected to an injector (as taught in col. 3 lines 45-52), the injector can be said to "comprise" the filter and the housing thereof, as claimed.

However, Isozumi fails to disclose a tubular fluid passage that has a cross-sectional area equivalent to or smaller than a summation of cross sectional areas of the holes at every point along the length of the filter section. However, such is taught by Verlag (XP-000766379): Verlag teaches the total section of the small holes to be larger than that of the hole of the machine nozzle (since the cross-section of the gap is smaller at each point along the filter section than the bore hole (nozzle opening), the gap is certainly smaller than the total of the hole openings). It would have been obvious to one of ordinary skill in the art at the time of the invention to modify Isozumi in view of Verlag (XP-000766379), since Verlag teaches the benefit of minimizing the pressure loss at a high velocity of supplying the solution.

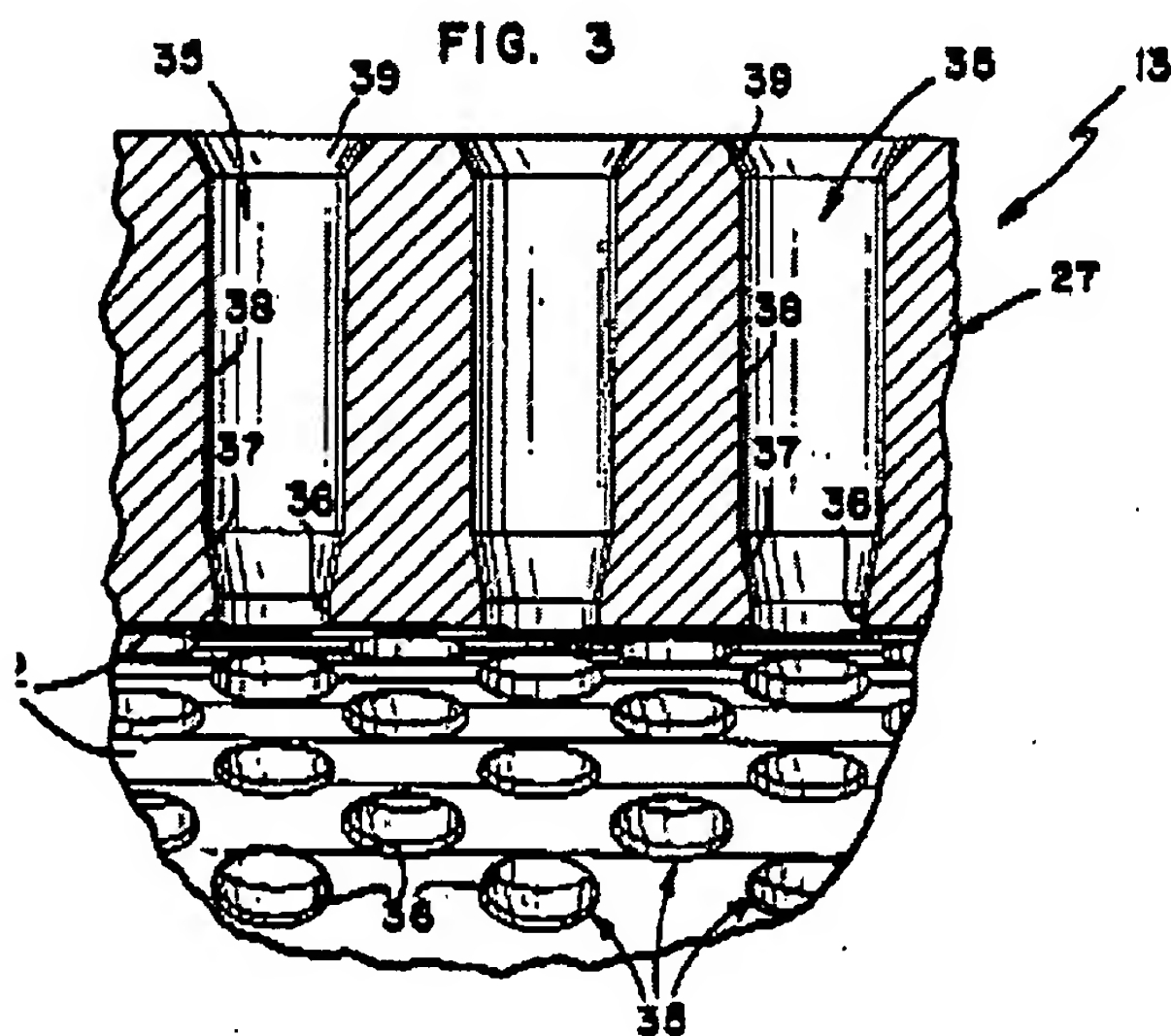
3. Claims 2, 18 and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi in view of Verlag as applied above and in further view of JP 5-269316, hereinafter '316. '316 teaches a hemispherically-shaped



closed end [as in claim 2] and a tubular passageway of substantially constant cross-sectional area [as in claims 18 and 21]. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of

the invention to have the filter section of the modified Isozumi to create a tubular passageway of substantially constant cross-section (after the initial taper) and to have the hemispherically-shaped closed end, since '316 teaches the benefit of a simplified construction (abstract) in a filter to be used in the same environment as that of Isozumi and that also seeks to control pore size.

4. Claims 4-8, 13 and 23-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi in view of Verlag as applied above and in further view of Neuman (U.S. 5,062,952).



Neuman teaches filter openings having the claimed tapers, steps to a taper (e.g. that from straight bore 36 to tapered bore 37), and different shapes and combinations of shapes [as in claims 4-8]. As explained above, the filter of Isozumi is in an inlet of an injection [as in claim 13]. It is considered that it would have been obvious to one ordinarily skilled in

the art at the time of the invention to have the filter section with filter opening design of Neuman in the invention of modified Isozumi, since Neuman teaches the benefits of preventing clogging

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of bores (col. 4, lines 31-37) and using a smaller mass of filter element with the same number of openings without weakening the filter element (col. 4, lines 50-55).

As for newly added claims 23-25, it is pointed out that the arrangement of the circular holes

of Neuman also includes holes disposed at a substantially regular interval along a substantially helical line.

5. Claims 2, 18, 21, 23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Isozumi in view of Verlag as applied above, and in further view of Stamstad (U.S. 4,882,055). As shown in his drawings, Stamstad teaches a hemispherically-shaped closed end [as in claim 2] and a configuration that would result in a tubular passageway of substantially constant cross-sectional area [as in claims 18 and 21]. He also teaches circular openings [as in claims 23 and 26]. It is considered that it would have been obvious to one ordinarily skilled in the art at the time of the invention to have the filter of the modified Isozumi to be configured as in Stamstad, since Stamstad teaches the benefit of a filter that is molded shaped and ready for use without the need for further processing and that allows for a filter that is easily cleaned (col. 6).

Response to Arguments

6. Applicant's arguments with respect to the claims have been considered but are moot in view of the new grounds of rejection necessitated by amendment. Applicant's new limitation is taught by the now applied Verlag. JP '316 showing a rounded end and teaching a sealed end is sufficient for applicant's claimed "closed hemispherical end".

Conclusion

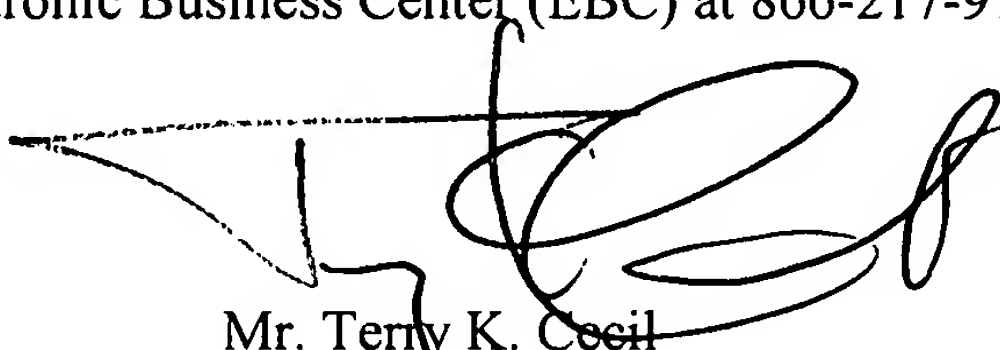
7. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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8. Contact Information:

- Examiner Mr. Terry K. Cecil can be reached at (571) 272-1138 at the Carlisle campus in Alexandria, Virginia for any inquiries concerning this communication or earlier communications from the examiner. Note that the examiner is on the increased flextime schedule but can normally be found in the office during the hours of 8:30a to 4:30p, on at least four days during the week M-F.
- David R. Sample, the examiner's supervisor can be reached at 571-272-1376, if attempts to reach the examiner are unsuccessful.
- The Fax number for this art unit for official faxes is (571) 273-8300.
- Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



Mr. Terry K. Cecil
Primary Examiner
Art Unit 1723

TKC
October 1, 2007